ZooKeys 1226: 25–46 (2025)
DOI: 10.3897/zookeys.1226.140239

Research Article

Two new species and two new combinations within *Paleosepharia* (Coleoptera, Chrysomelidae, Galerucinae) from China

Chuan Feng[1,2], Xingke Yang[1], Siqin Ge[1,2]

1 *Key Laboratory of Zoological Systematics and Evolution, Institute of Zoology, Chinese Academy of Sciences, 1 Beichen West Road, Chaoyang District, Beijing 100101, China*
2 *University of Chinese Academy of Sciences, No. 19(A) Yuquan Road, Shijingshan District, Beijing, 100049, China*
Corresponding authors: Siqin Ge (gesq@ioz.ac.cn); Xingke Yang (yangxk@ioz.ac.cn)

Abstract

In this study, two new species of the leaf-beetle genus *Paleosepharia* Laboissière, 1936 from China are described: *P. subrubra* Feng, Yang & Ge, **sp. nov.** and *P. emeiensis* Feng, Yang & Ge, **sp. nov.** Meanwhile, *Paleosepharia truncata* Laboissière, 1936 is first recorded for China. Additionally, *Monolepta bicavipennis* Chen, 1942 and *Monolepta quadricavata* Chen, 1976 are redescribed and proposed as new combinations under *Paleosepharia*. A key to the Chinese species of *Paleosepharia* is also provided.

Key words: China, identification key, leaf beetles, new record, new combination, taxonomy

OPEN ACCESS

Academic editor: Maurizio Biondi
Received: 25 October 2024
Accepted: 7 January 2025
Published: 6 February 2025

ZooBank: https://zoobank.org/20A5BC48-72A9-4C5E-8799-D3E8B9C823E2

Citation: Feng C, Yang X, Ge S (2025) Two new species and two new combinations within *Paleosepharia* (Coleoptera, Chrysomelidae, Galerucinae) from China. ZooKeys 1226: 25–46. https://doi.org/10.3897/zookeys.1226.140239

Copyright: © Chuan Feng et al.
This is an open access article distributed under terms of the Creative Commons Attribution License (Attribution 4.0 International – CC BY 4.0).

Introduction

The subfamily Galerucinae includes three supertribes: Alticitae, Galerucitae, and Serraticollitae (Bezděk and Sekerka 2024). Galerucitae is one of the most diverse groups of leaf beetles, encompassing 7145 species across 543 genera worldwide (Nie et al. 2017). There are 127 genera and 1208 species recorded in China (Yang et al. 2015; Beenen 2024). Among the Galerucitae, the "Monoleptites" is highly diverse, characterized by distinctly elongated first tarsomere of the hind legs. The section "Monoleptites" is a suprageneric, non-monophyletic name and a rank that was established by Chapuis (1875); it is generally accepted to describe a highly diverse group of Galerucitae in the tribe Luperini.

Wilcox's (1973, 1975) catalogue reports 36 genera of 'Monoleptites' worldwide. After revisions by many scholars, such as Wagner (1999, 2003, 2004, 2007, 2011, 2017), Hazmi and Wagner (2010a, 2010b, 2013), Lee (2020), many new genera were established. So far, "Monoleptites" includes approximately 60 genera, with 10 of the genera reported in China (Beenen 2010, 2024), namely: *Atrachya* Chevrolat, 1836, *Chinochya* Lee, 2020, *Macrima* Baly, 1878, *Monolepta* Chevrolat, 1836, *Neochya* Lee, 2020, *Ochralepta* Beenen, 2024, *Paleosepharia* Laboissière, 1936, *Pseudosepharia* Laboissière, 1936, *Trichosepharia* Laboissière, 1936 and *Tsouchya* Lee, 2020. Among these genera, *Monolepta* is the largest (Wagner 2007), with 723 described species worldwide (J. Bezděk 2024, pers. comm.). Apart from *Monolepta*, *Paleosepharia* is the most diverse genus, exhibiting various structural modifications on the elytra (Medvedev 2009, 2012, 2013, 2014; Mohamedsaid 1996, 1999, 2000, 2001).

Material and methods

Morphological characters were examined using a Leica S8AP0 microscope.

Dissections

The male genitalia of each species were dissected using the following procedure: for dried or ethanol preserved specimens, the abdomen was carefully removed from each specimen, bathed in boiling water for 5–10 minutes, and then transferred to a vial containing 10% KOH solution and bathed for 3–5 min. The abdomen with the aedeagus was washed in distilled water 3 to 4 times, then transferred onto a cavity slide using fine forceps and the aedeagus was separated from the abdomen using a hooked, fine dissecting needle.

Photographs

The genitalia were mounted in a drop of glycerol on slides for photography. Images of the habitus and male genitalia were taken using a Canon EOS R5 digital camera. To obtain the full depth of focus, all images were stacked using HELICON FOCUS ver. 7.7.4 and the resulting output was edited with Adobe Photoshop CC 2018.

Labels written in Chinese are translated into English and cited verbatim.

Abbreviation used in the paper

TL type locality.
TD type deposition.

The materials in this study are deposited in the following institutions:

IZCAS Institute of Zoology, Chinese Academy of Sciences, Beijing, CHINA
IZGAS Institute of Zoology, Guangdong Academy of Sciences, Guangzhou, CHINA
MNHN Muséum national d'Histoire naturelle, Paris, FRANCE
ZMH Zoological Museum Hamburg, Hamburg, GERMANY

Results

Paleosepharia Laboissière, 1936: 251

Type species. *Paleosepharia truncata* Laboissière, 1936, by monotypy and original designation. Redescription in Rizki et al. 2016.

Distribution. Oriental and Palaearctic regions.

Diagnosis. This genus is similar to *Atrachya* Chevrolat, 1836 and *Monolepta* Chevrolat, 1836. In *Paleosepharia*, the third antennomere is longer than the second (both antennomeres are more or less equal in *Monolepta*), and the epipleuron continues towards the apex (suddenly narrowed before the middle in *Monolepta*), procoxal cavity is closed behind (opened in *Atrachya*).

Male genitalia. In *Paleosepharia* and *Atrachya* the aedeagus is parallel-sided in the basal two-thirds, apical third strongly narrowed (aedeagus slender,

parallel-sided in *Monolepta*). In *Paleosepharia*, tectum long, rounded or truncate at apex (rounded at apex in *Monolepta*; incised at apex, the two apical tips forming strong hooks in *Atrachya*). *Paleosepharia* usually has two pairs of strongly sclerotized spiculae (lateral and median), while the ventral spiculae are weakly sclerotized. The median spiculae consist of long, slender spikes.

***Paleosepharia subrubra* Feng, Yang & Ge, sp. nov.**
https://zoobank.org/9B6BA567-011C-423C-96DC-FF829B69C52E
Figs 1, 2

Type material. ***Holotype***: • ♂, China, Guangdong Province, Chebaling National National Nature Reserve, Xiba, 26 Jul. 2022, Meiying Lin et al. leg., IZGAS.

Paratype: 1 ♀, • China, Fujian Province, Mount Wuyi, Huangxizhou, 1 Aug. 1997, Youwei Zhang leg., IZCAS.

Etymology. This species name refers to the red base of the elytra.

Diagnosis. The new species closely resembles *P. kubani* Medvedev, 2004 with both species having black elytra and each elytron with two yellow spots. It differs from *P. kubani* in the elytra with a longitudinal depression at the base and connected to a semicircular depression at the end. In *P. subrubra* sp. nov., the elytra have a rectangular depression at the base. Aedeagus slender, rounded at apex, tectum long, truncate at apex, not reaching apex of the aedeagus.

Description. Male: Length: 5.2 mm, width: 2.5 mm. Head, pronotum, scutellum, ventral surface of body and femur reddish-brown, antennae black-brown, with first antennomere reddish-brown. Elytra black and reddish-brown at base, each elytron has two white spots, tibiae and tarsi black. Vertex with sparse punctures. Frontal tubercles transverse, extending downward between antennal bases. Antennae slender, longer than body. First antennomere shiny, bare, rod-shaped, second to eleventh antennomeres with short hairs, second antennomere shortest, third antennomere about 1.55× as long as second; fourth antennomere about 1.78× as long as third, fifth antennomere about 1.1× as long as fourth, sixth to eleventh antennomeres equal in length to fifth. Pronotum about 1.29× as wide as long, lateral margins straight, basal border slightly convex, apical border slightly concave, disc strongly convex, with lateral fovea and dense minute punctures. Scutellum triangular, smooth, impunctate. Elytra wider than pronotum, humeri convex, with pair of weak depressions and pair of rounded protrusions near suture at basal 1/3; disc with dense, minute punctures. Elytral epipleuron broad at base, gradually narrowed from middle to apex. Each tibia with distinct spur at apex, segment 1 of hind tarsi longer than remaining segments combined. Aedeagus slender, with parallel-sided and rounded tip, moderately recurved at apex in lateral view. Lateral spiculae short and slightly curved, ventral spiculae comb-shaped, and median spiculae long.

Female: Length: 4.6 mm, width: 2.2 mm.

Third antennomere about 1.8× as long as second; fourth antennomere about 1.6× as long as third. Elytra without protrusions and with slight depressions at base. Spermatheca with big and rounded nodulus, middle part short, and cornu straight. Vaginal palps with wide base and rounded apex, each palp slightly narrowing posteriorly, with 5 setae placed at apex, additional 2 setae subapically.

Distribution. China: Fujian, Guangdong.

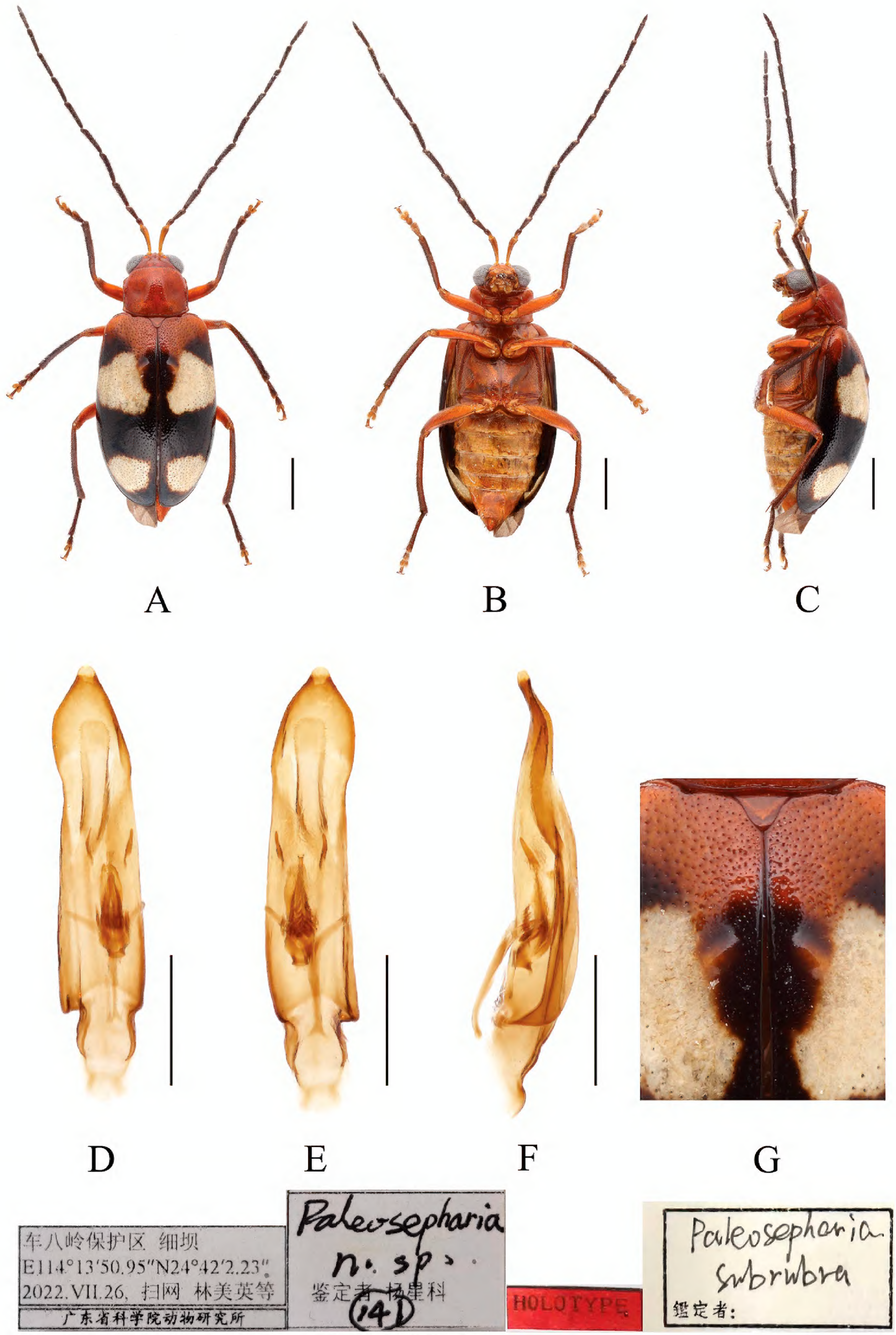

Figure 1. *Paleosepharia subrubra* sp. nov. (holotype, male) **A–C** habitus **D–F** aedeagus **G** depression of the elytra of the male. **A, D** dorsal view **B, E** ventral view **C, F** lateral view. Scale bars: 1 mm (**A–C**); 0.5 mm (**D–F**).

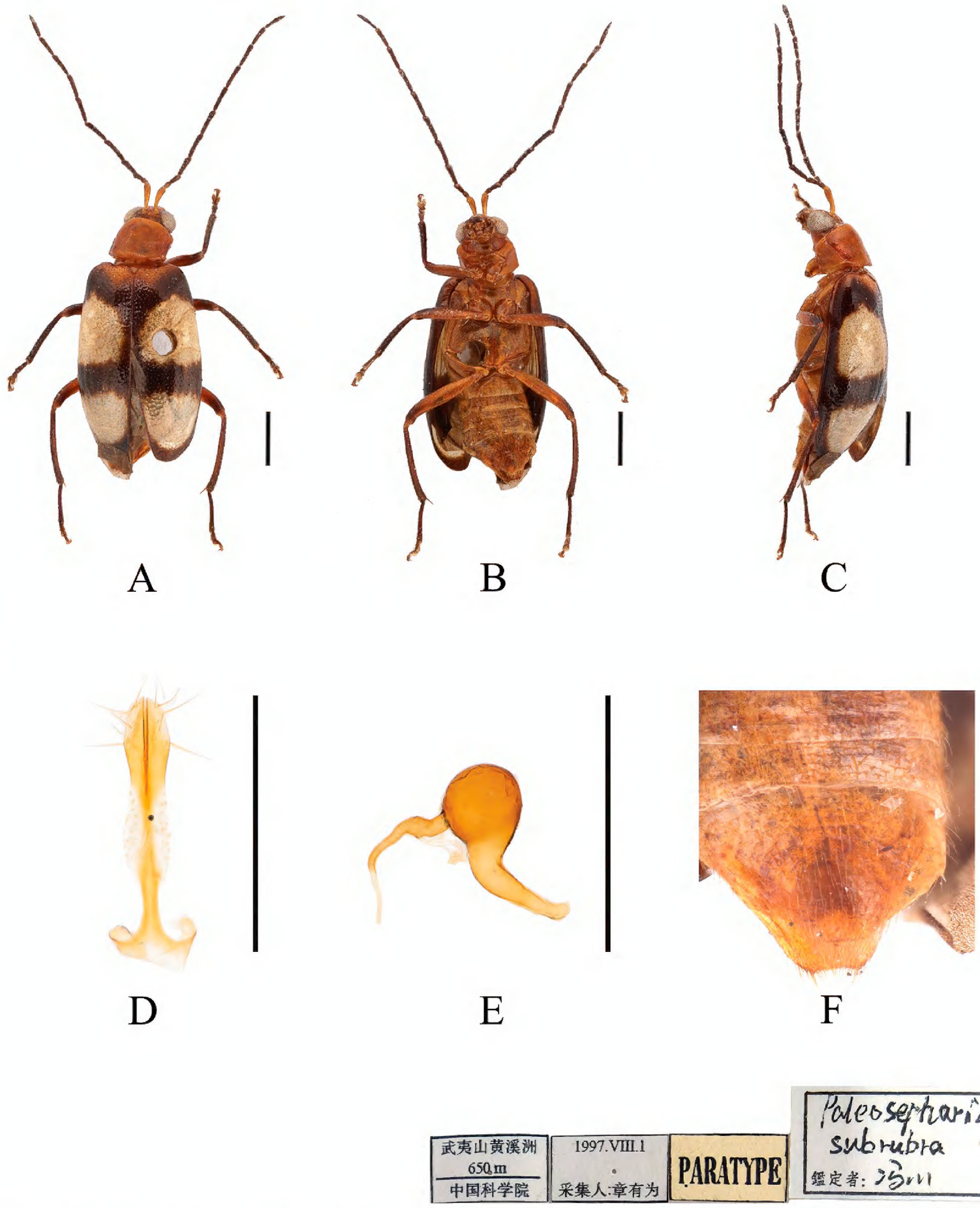

Figure 2. *Paleosepharia subrubra* sp. nov. (paratype, female) **A–C** habitus **D** vaginal palps **E** spermatheca **F** apex of abdomen of the female. **A** dorsal view **B** ventral view **C** lateral view. Scale bars: 1 mm (**A–C**); 0.5 mm (**D**).

Paleosepharia emeiensis **Feng, Yang & Ge, sp. nov.**
https://zoobank.org/641C30A4-B79B-45AF-9742-7ABDA2AF9487
Figs 3, 4

Type material. ***Holotype***: • ♂, China, Sichuan Province, Mt Emei, Baoguosi, 550–750 m a. s. l., 9 May 1957, Keren Huang leg., IZCAS. ***Paratype***: • 3 ♂♂ 4 ♀♀, same data as for holotype; • 3 ♂♂ 2 ♀♀, China, Sichuan Province, Mt Emei,

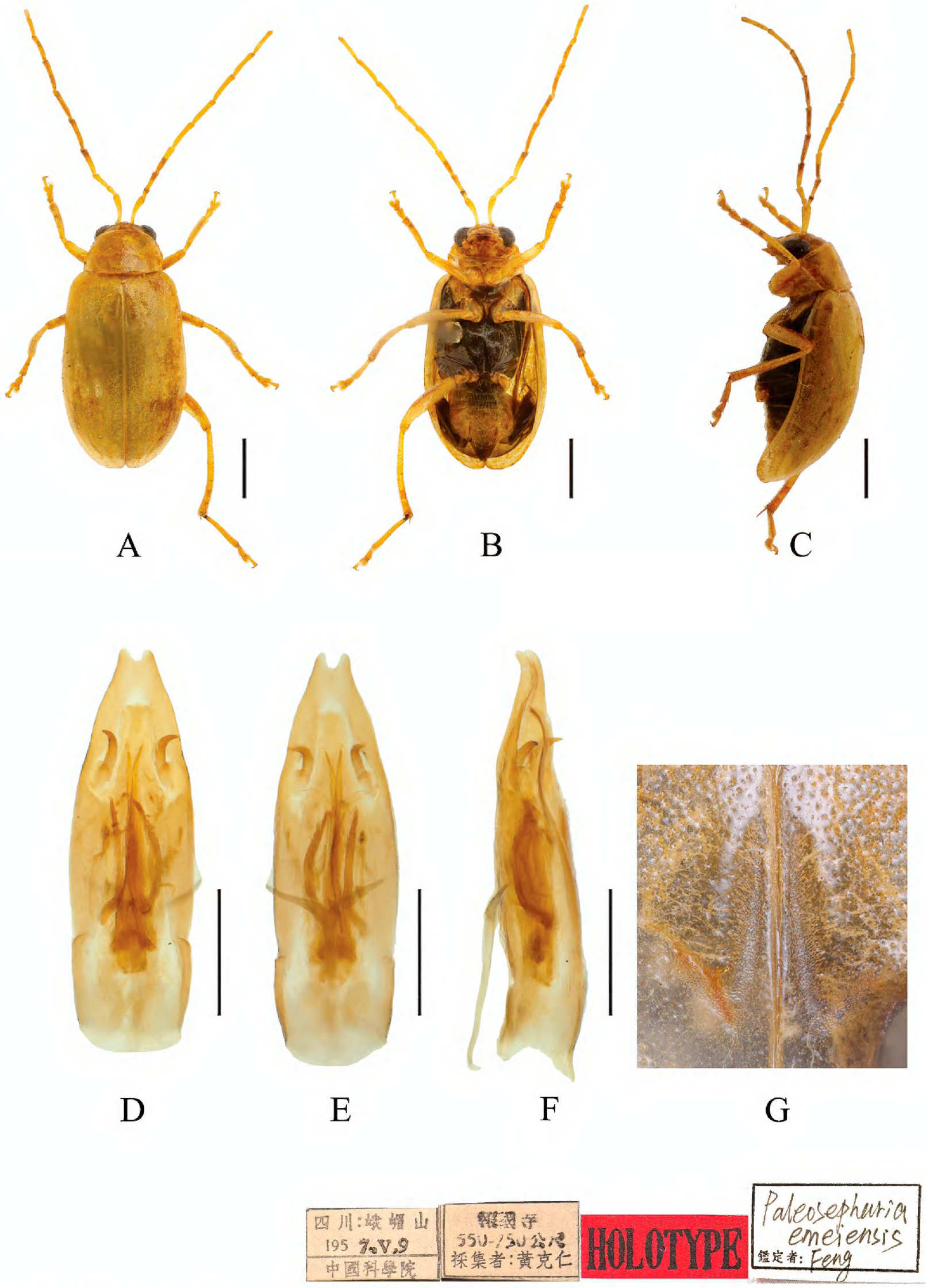

Figure 3. *Paleosepharia emeiensis* sp. nov. (holotype, male) **A–C** habitus **D–F** aedeagus **G** depression of the elytra of the male. **A, D** dorsal view **B, E** ventral view **C, F** lateral view. Scale bars: 1 mm (**A–C**); 0.5 mm (**D–F**).

Baoguosi, 550–750 m a. s. l., 2 Jun. 1957, Keren Huang leg., IZCAS; • 3 ♂♂ 4 ♀♀, CHINA, Sichuan Province, Fengdu County, Shiping, 610 m a. s. l., 3 Jun. 1994, Xingke Yang leg., IZCAS; • 2 ♂♂ 5 ♀♀, CHINA, Sichuan Province, Fengdu County, Shiping, 610 m a. s. l., 3 Jun. 1994, Youwei Zhang leg., IZCAS; • 2 ♂♂ 6 ♀♀, CHINA, Sichuan Province, Fengdu County, Shiping, 610 m a. s. l., 3 Jun. 1994, Wenzhu Li leg., IZCAS.

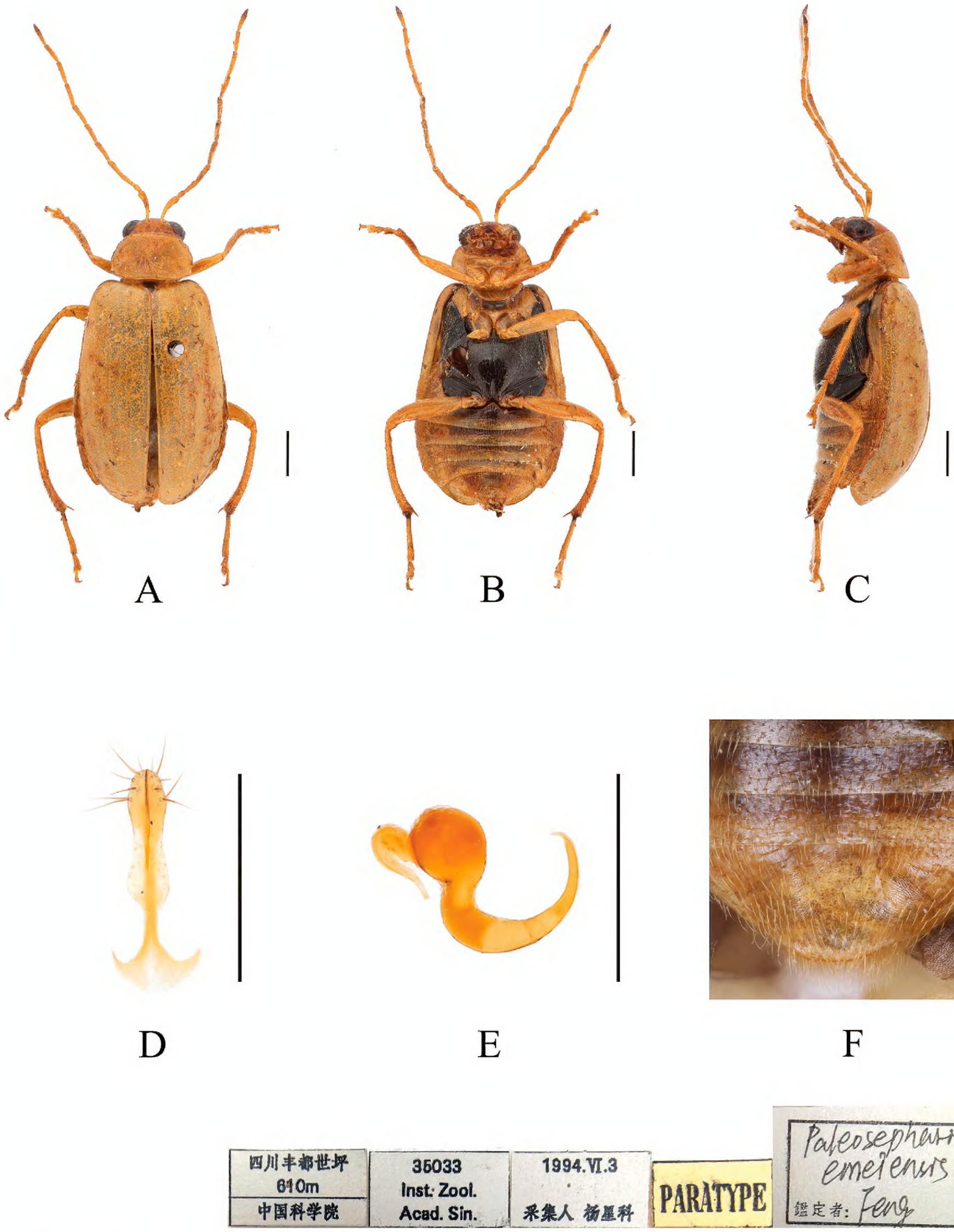

Figure 4. *Paleosepharia emeiensis* sp. nov. (paratype, female) **A–C** habitus **D** vaginal palps **E** spermatheca **F** apex of abdomen of the female. **A** dorsal view **B** ventral view **C** lateral view. Scale bars: 1 mm (**A–C**); 0.5 mm (**D, E**).

Etymology. This species name refers to the type locality.

Diagnosis. The new species closely resembles *P. fulvicornis* Chen, 1942. It differs from *P. fulvicornis* in the elytra with a longitudinal depression at base, aedeagus slender. In *P. emeiensis*, elytra have a hook-shaped depression at base, and aedeagus robust, 3.1 times longer than wide, parallel-sided in the basal

two-thirds, apical third strongly narrowed, apical protrusions nipple-shaped. Tectum long, not reaching the apex of the aedeagus, and truncate at apex.

Description. Male: Length: 4.4–5.6 mm, width: 2.2–2.8 mm (mean length 5.2 mm, mean width 2.5 mm, *N* = 7).

General color yellow or yellowish-brown, basal part of inner margin of epipleuron, mesothorax, except mesoepisternum, metathorax and base of first metatarsomere black.

Vertex with sparse punctures. Frontal tubercles transverse, extending downward between antenna bases. Antennae slender, 0.9× as long as body. First antennomere shiny bare, rod-shaped, second to eleventh antennomeres with short hairs, second antennomere shortest, third antennomere 1.8× as long as second, fourth antennomere about 1.3× as long as third, fifth to eleventh antennomeres shorter than fourth and gradually shortened. Pronotum about 1.6× as wide as long, lateral margins slightly curved, basal border slightly convex, apical border slightly concave, disc strongly convex, with dense punctures. Scutellum triangular, smooth, impunctate. Elytra wider than pronotum, humeri convex, disc with dense, minute punctures; and hook-shaped depression behind scutellum. Elytral epipleuron broad at base, continues towards apex. Each tibia with distinct spur at apex, segment 1 of hind tarsi longer than remaining segments combined. Aedeagus robust, with sides slightly rounded, slightly curved at apex in lateral view. Apical protrusions nipple-shaped, small, well separated from each other. Median spiculae with two pairs of slender sclerites, lateral spiculae strongly curved.

Female: Length: 4.8–5.8 mm, width: 2.3–3.2 mm (mean length 5.4 mm, mean width 2.6 mm, *N* = 8).

General color yellow or yellowish-brown, scutellum, basal part of inner margin of epipleuron, mesothorax, except mesoepisternum, metathorax and base of first metatarsomere black. Third antennomere about twice as long as second. Elytra lacking longitudinal impression. Spermatheca with big and rounded nodulus, middle part short, and cornu strongly curved. Vaginal palps with wide base and rounded apex, each palp slightly narrowing posteriorly, with 5 setae placed at apex, additional 2 setae subapically.

Distribution. China: Sichuan.

Paleosepharia bicavipennis **(Chen, 1942), comb. nov.**

Figs 5–7

Monolepta bicavipennis Chen, 1942: 55. TL China: Shaanxi. TD IZCAS.

Type specimens examined. ***Holotype***: • ♂ Shensi, Wei-cze-ping, 18 Aug. 1916, P. Licent. ***Paratypes***: • 1 ♂ 2 ♀♀, China, Zhejiang Province, Mount Tianmu, 26 Aug. 1947, IZCAS; • 2 ♀♀, China, Zhejiang Province, Mount Tianmu, 31 Aug. 1947, IZCAS.

Other specimens examined. 7 ♂♂, • China, Henan Province, Song County, Mount Baiyun, 1600 m a. s. l., 19 Jul. 2002, Lijie Zhang leg., IZCAS; • 1 ♂ 5 ♀♀, China, Shaanxi Province, Foping, Yaohe,870–1000 m a. s. l., 25 Jul. 1998, Jun Chen leg., IZCAS; • 5 ♂♂ 1 ♀, China, Gansu Province, Wen County, Bifenggou, 940–1500 m a. s. l., 28 Jul. 1999, Jian Yao leg., IZCAS; • 10 ♂♂ 1 ♀, China,

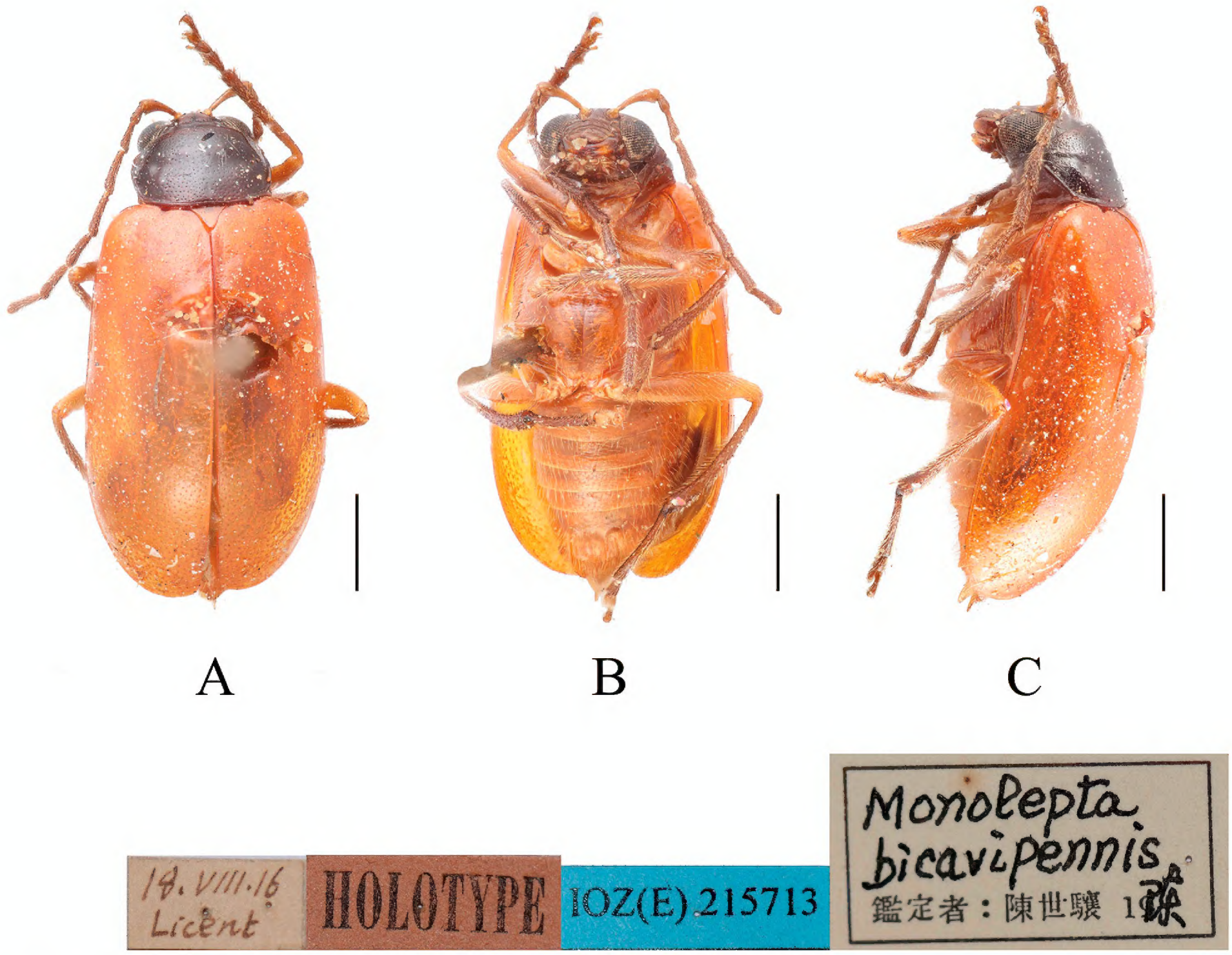

Figure 5. *Paleosepharia bicavipennis* (Chen, 1942), comb. nov. (holotype; male) **A–C** habitus. **A** dorsal view **B** ventral view **C** lateral view. Scale bar: 1 mm.

Hubei Province, Shennongjia, Songbai, 950 m a. s. l., 18 Jul. 1980, Peiyu Yu leg., IZCAS; • 9 ♀♀, China, Hunan Province, Yongshun, 600–820 m a. s. l., 7 Aug. 1988, Shuyong Wang leg., IZCAS; • 5 ♂♂ 1 ♀, China, Yunnan Province, Weixi County, Baijixun, 1780 m a. s. l., 10 Jul. 1981, Shuyong Wang leg., IZCAS.

Notes. Based on the following characters of this species, which are characteristic for *Paleosepharia*, it is transferred from *Monolepta* to *Paleosepharia*: the third antennomere is longer than the second; depression in the elytra; median lobe parallel-sided in the basal two-thirds, apical third strongly narrowed; and tectum long, truncate at apex.

Diagnosis. This species is easy to distinguish from other species. The elytra is red or yellow-brown, with two comma-shaped deep concavities and two cylindrical protrusions in the middle, and cylindrical protrusions with short hairs.

Redescription. Male: Length: 4.2–4.9 mm, width: 2.2–2.6 mm (mean length 4.6 mm, mean width 2.4 mm, *N* = 30). General color yellow-brown or red, head and pronotum black, antennae brown, legs dark brown, ventral side of hind femora yellow-brown, in some specimens, legs largely brown with most tibiae darkened. Vertex with sparse punctures. Frontal tubercles transverse, extending downward between antenna bases. Antennae slender, 0.95× as long as body. First antennomere shiny bare, rod-shaped, second to eleventh antennomeres

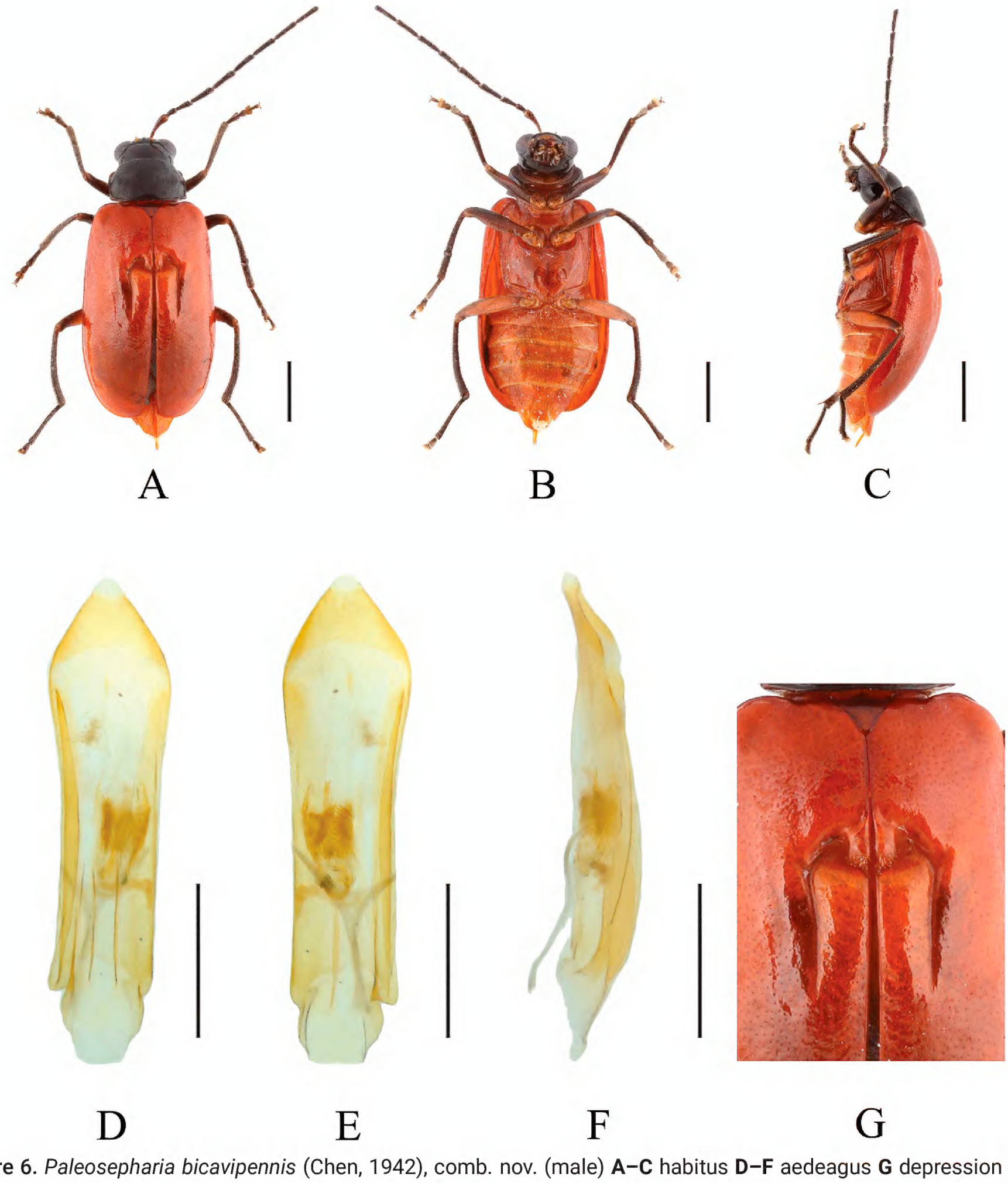

Figure 6. *Paleosepharia bicavipennis* (Chen, 1942), comb. nov. (male) **A–C** habitus **D–F** aedeagus **G** depression of the elytra of the male. **A, D** dorsal view **B, E** ventral view **C, F** lateral view. Scale bars: 1 mm (**A–C**); 0.5 mm (**D–F**).

with short hairs, second antennomere shortest, third antennomere about 1.8× as long as second; fourth antennomere about 1.5× as long as third, fifth to eleventh antennomeres equal in length to fourth. Pronotum about 1.6× as wide as long, lateral margins slightly curved, basal border slightly convex, apical border slightly concave, disc strongly convex, with lateral fovea and dense minute punctures. Scutellum triangular, smooth, impunctate. Elytra wider than pronotum, humeri convex. Each elytron with comma-shaped deep concavity and cylindrical protrusions in middle, cylindrical protrusions with short hairs. In some specimens, longitudinal depression end of concavity elongated or shortened, Disc with dense, minute punctures. Elytral epipleuron broad at base, gradually narrowed from middle to apex. Each tibia with distinct spur at apex, segment

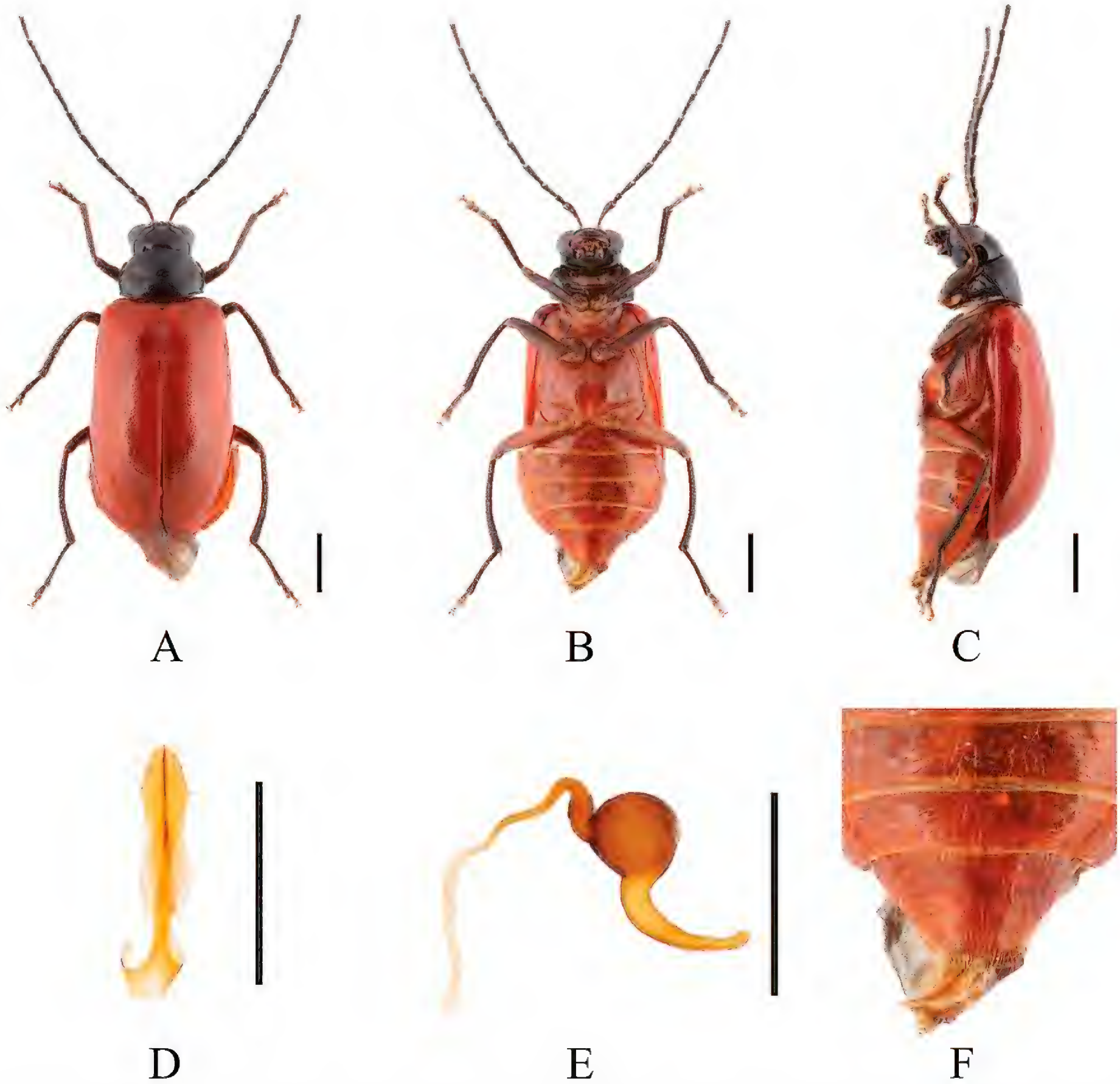

Figure 7. *Paleosepharia bicavipennis* (Chen, 1942), comb. nov. (female) **A–C** habitus **D** vaginal palps **E** spermatheca **F** apex of abdomen of the female. **A** dorsal view **B** ventral view **C** lateral view. Scale bars: 1 mm (**A–C**); 0.5 mm (**D, E**).

1 of hind tarsi longer than remaining segments combined. Aedeagus robust, gradually widened towards subapex, triangle at apex, moderately recurved at apex in lateral view. Lateral spiculae short, ventral spiculae comb-shaped, and median spiculae long.

Female: Length: 4.2–5.0 mm, width: 2.0–2.6 mm (mean length 4.7 mm, mean width 2.4 mm, ***N*** = 21).

Third antennomere about 1.5× as long as second; fourth antennomere about 1.6× as long as third. Elytra without short hairs and depressions. Spermatheca with big and rounded nodulus, middle part short, and cornu slightly curved. Vaginal palps with wide base, anteriorly with subtriangular tip, each palp slightly narrowing posteriorly, with pointed apex, 5 setae placed at apex, additional 2 setae subapically.

Distribution. China: Gansu, Shanxi, Shaanxi, Henan, Anhui, Zhejiang, Hubei, Jiangxi, Hunan, Guangxi, Guizhou, Yunnan.

***Paleosepharia quadricavata* (Chen et al., 1976), comb. nov.**
Figs 8–10

Monolepta quadricavata Chen, 1976: 205. TL: China, Xizang; TD: IZCAS.

Type material. ***Holotype***: • ♂, China, Xizang Province, Chayu, Shama, 1600 m a. s. l., 20 Jul. 1973, Fusheng Huang leg. IZCAS.

Other specimens examined. • 1 ♂, China, Yunan Province, Nujiang, Fugong County, Lumadong, 1200 m a. s. l., 11 Aug. 2024, Chuan Feng leg. IZCAS; • 2 ♀♀, Yunan Province, Fugong County, Maji, Majimi, 1505 m a. s. l., 26 Aug. 2005, Hongbin Liang leg. IZCAS; • 1 ♂, China, Xizang Province, Motuo County, Beibeng, Badeng, 1410 m a. s. l., 24 Jul. 2024, Chuan Feng leg. IZCAS; • 2 ♂♂, China, Xizang Province, Bomi County, Yigong, 2050 m a. s. l., 8 Aug. 2024, Chuan Feng leg. IZCAS; • 4 ♂♂, China, Xizang Province, Motuo County, Beibeng, 799 m a. s. l., 19 Aug. 2015, Jian Yao leg. IZCAS; • 5 ♂♂, China, Xizang Province, Motuo County, Beibeng, 799 m a. s. l., 19 Aug. 2015, Hongbin Liang & Zhengzhong Huang leg. IZCAS; • 5 ♂♂, China, Xizang Province, Motuo County, Ximohe, 707 m a. s. l., 17 Aug. 2015, Jian Yao leg. IZCAS; • 1 ♀, China, Xizang Province, Motuo County, 900 m a. s. l., 27 Aug. 1982, Yinheng Han leg. IZCAS.

Notes. The species is transferred from *Monolepta* to *Paleosepharia* based on the following characters: the third antennomere longer than the second; depression in the elytra; aedeagus parallel-sided in the basal two-thirds, apical third strongly narrowed; tectum long, rounded at apex.

Diagnosis. This species is easy to distinguish from other species based on the elytra red or reddish-brown, with a large, deep concavity near suture in male.

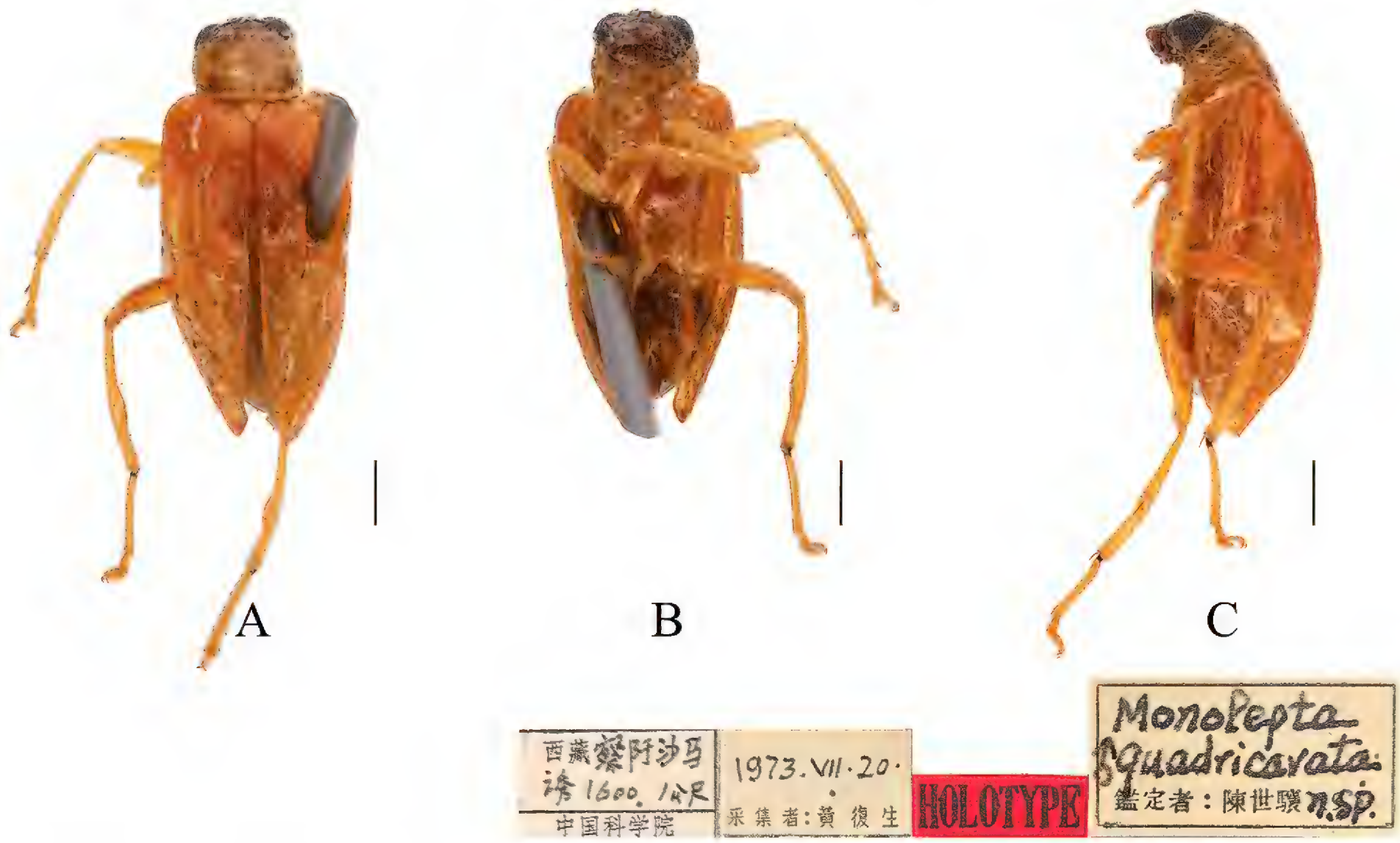

Figure 8. *Paleosepharia quadricavata* (Chen et al., 1976), comb. nov. (holotype, male) **A–C** habitus. **A** dorsal view **B** ventral view **C** lateral view. Scale bar: 1 mm.

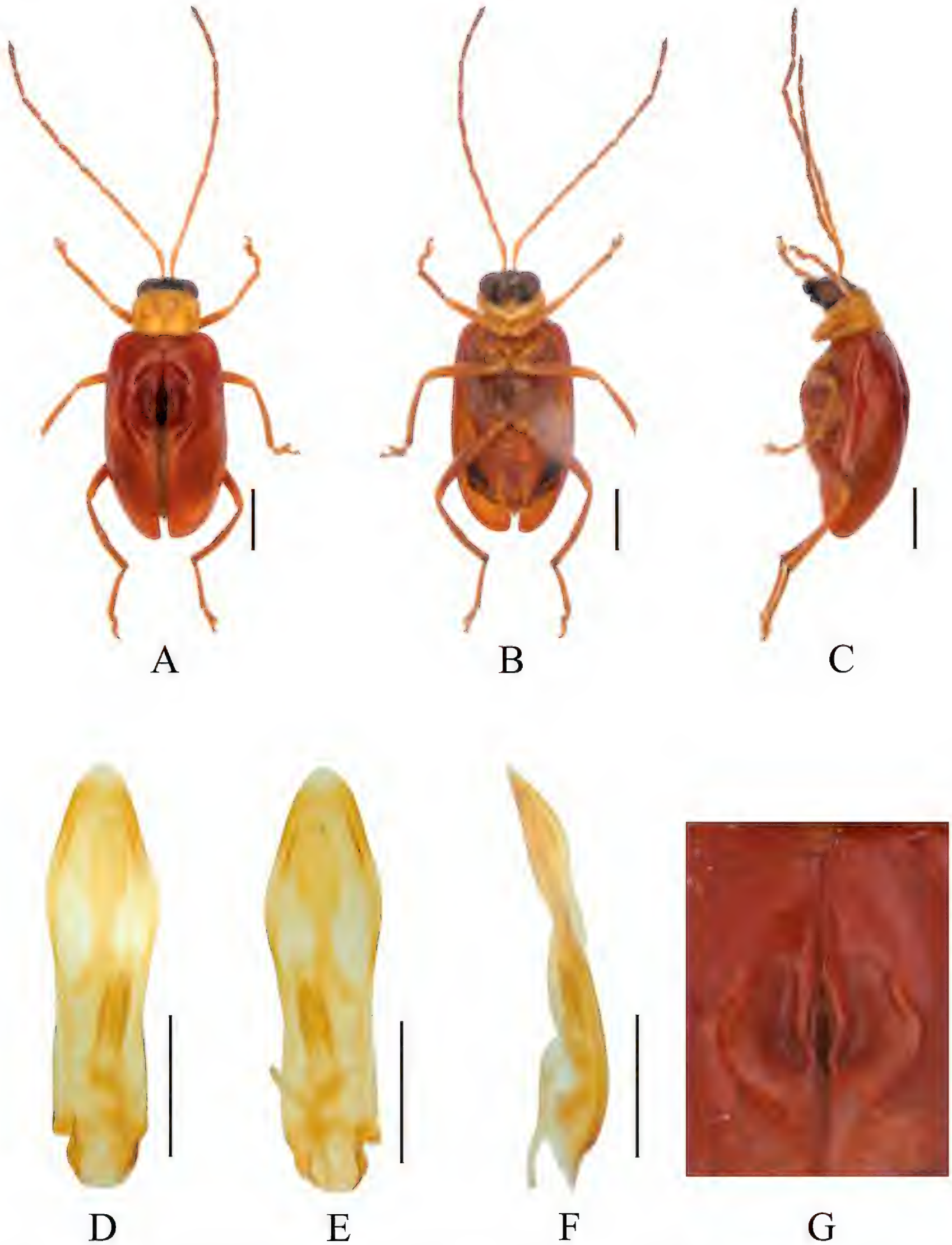

Figure 9. *Paleosepharia quadricavata* (Chen et al., 1976), comb. nov. (male) **A–C** habitus **D–F** aedeagus **G** depression of the elytra of the male. **A, D** dorsal view **B, E** ventral view **C, F** lateral view. Scale bars: 1 mm (**A–C**); 0.5 mm (**D–F**).

Redescription. Male: Length: 4.2–5.0 mm, width: 2.0–2.4 mm (mean length 4.6 mm, mean width 2.1 mm, *N* = 19).

General color red or reddish-brown, head black, pronotum yellow, antennae and legs brown.

Vertex with sparse punctures. Frontal tubercles transverse, extending downward between antennal bases. Antennae slender, equal to length of body.

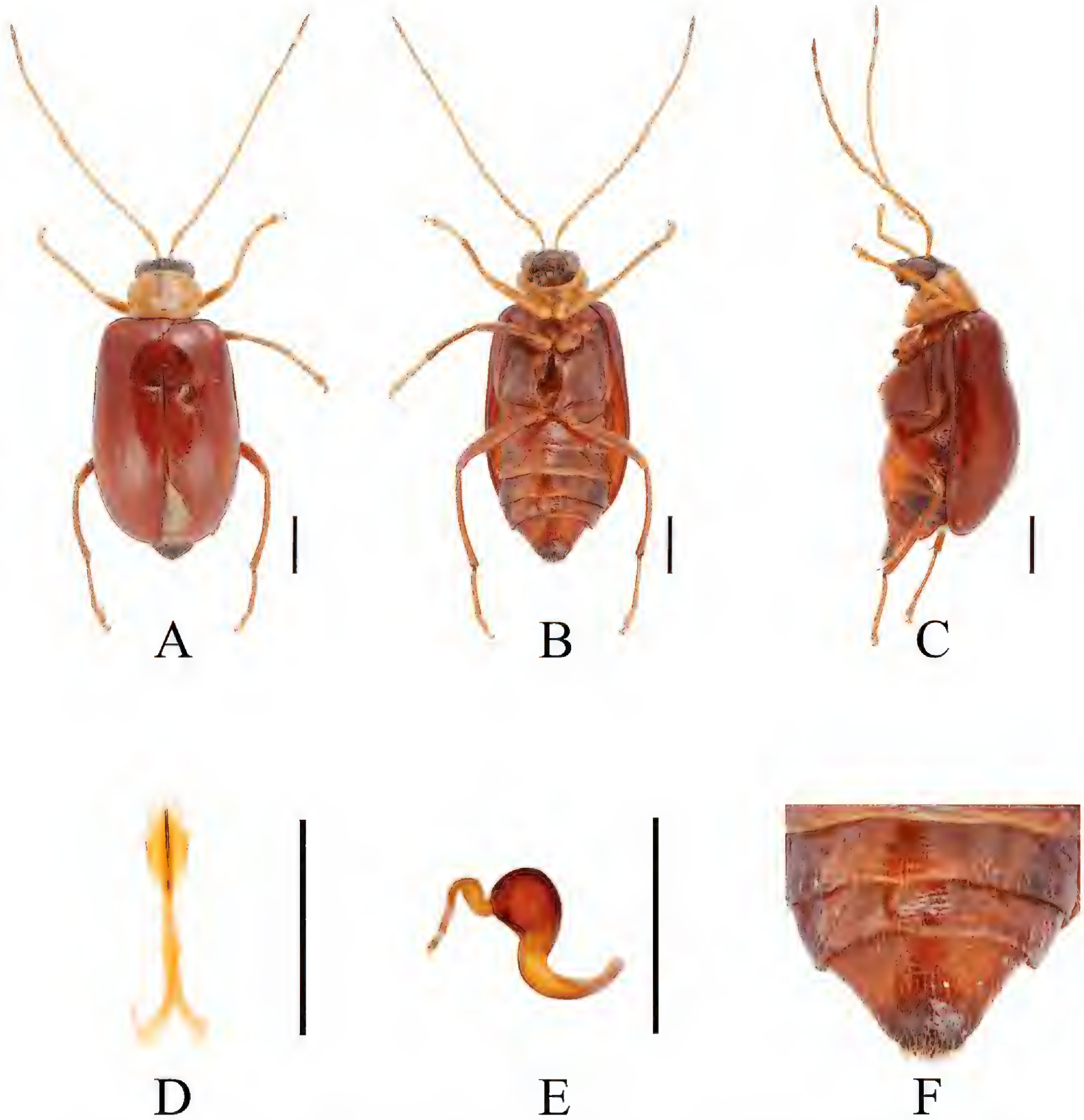

Figure 10. *Paleosepharia quadricavata* (Chen et al., 1976), comb. nov. (female) **A–C** habitus **D** vaginal palps **E** spermatheca **F** apex of abdomen of the female. **A** dorsal view **B** ventral view **C** lateral view. Scale bars: 1 mm (**A–C**); 0.5 mm (**D, E**).

First antennomere shiny bare, rod-shaped, second to eleventh antennomeres with short hairs, second antennomere shortest, third antennomere about 1.3× as long as second; fourth antennomere about twice as long as third, fifth antennomere about 1.2× as long as fourth, sixth to eleventh antennomeres equal in length to fourth. Pronotum about 1.4× as wide as long, lateral margins straight, basal border slightly concaved in middle, apical border straight, disc with lateral fovea and dense minute punctures. Scutellum triangular, smooth, impunctate. Elytra wider than pronotum, humeri convex, with large, deep concavity near suture at basal 1/3, disc with dense, minute punctures. Elytral epipleuron broad at base, gradually narrowed from middle to apex. Each tibia with distinct spur at apex, segment 1 of hind tarsi longer than remaining segments combined. Aedeagus robust, close to outsole shape in dorsal and ventral views, moderately recurved at apex in lateral view. Lateral spiculae short and curved, ventral spiculae comb-shaped, and median spiculae long.

Female: Length: 4.2–5.0 mm, width: 2.1–2.6 mm (mean length 4.7 mm, mean width 2.3 mm, ***N*** = 3).

Third antennomere about 1.6× as long as second; fourth antennomere about 1.6× as long as third. Elytra only with one slight depression at basal 1/3. Spermatheca with big and rounded nodulus, middle part short, cornu short and slightly curved. Vaginal palps with wide base and rounded apex, each palp slightly narrowing posteriorly, with 5 setae placed at apex, additional 2 setae subapically.

Distribution. China: Yunnan, Xizang; Nepal.

New record

***Paleosepharia truncata* Laboissière, 1936**
Figs 11–13

Paleosepharia truncata Laboissière 1936: 251. TL Vietnam. TD MNHN, ZMH.

Type material. ***Cotype***, • ♂, Le Moult Vend. via Reinbek Eing. Nr. 1, 1957. *Paleosepharia truncata* V. Laboissière Det. MUSEUM PARIS COCHINCHINE RIERRE 1878. ***Paralectotypus*** *Paleosepharia truncata* Laboissière, 1936 Hazmi et al. desig. ZMH 844689.

Other specimens examined. • 1 ♂, China, Yunan Province, Xishuangbanna, Mengzhe, 1700 m a. s. l., 22 Jun. 1958, Shuyong Wang leg., IZCAS; • 1 ♀, China, Yunan Province, Xishuangbanna, Menghun, 1200 m a. s. l., 4 Jun. 1958, Shuyong Wang leg., IZCAS; • 1 ♀, China, Yunan Province, Xishuangbanna, Menga,

Figure 11. *Paleosepharia truncata* Laboissière, 1936 (paratype). Scale bar: 1 mm.

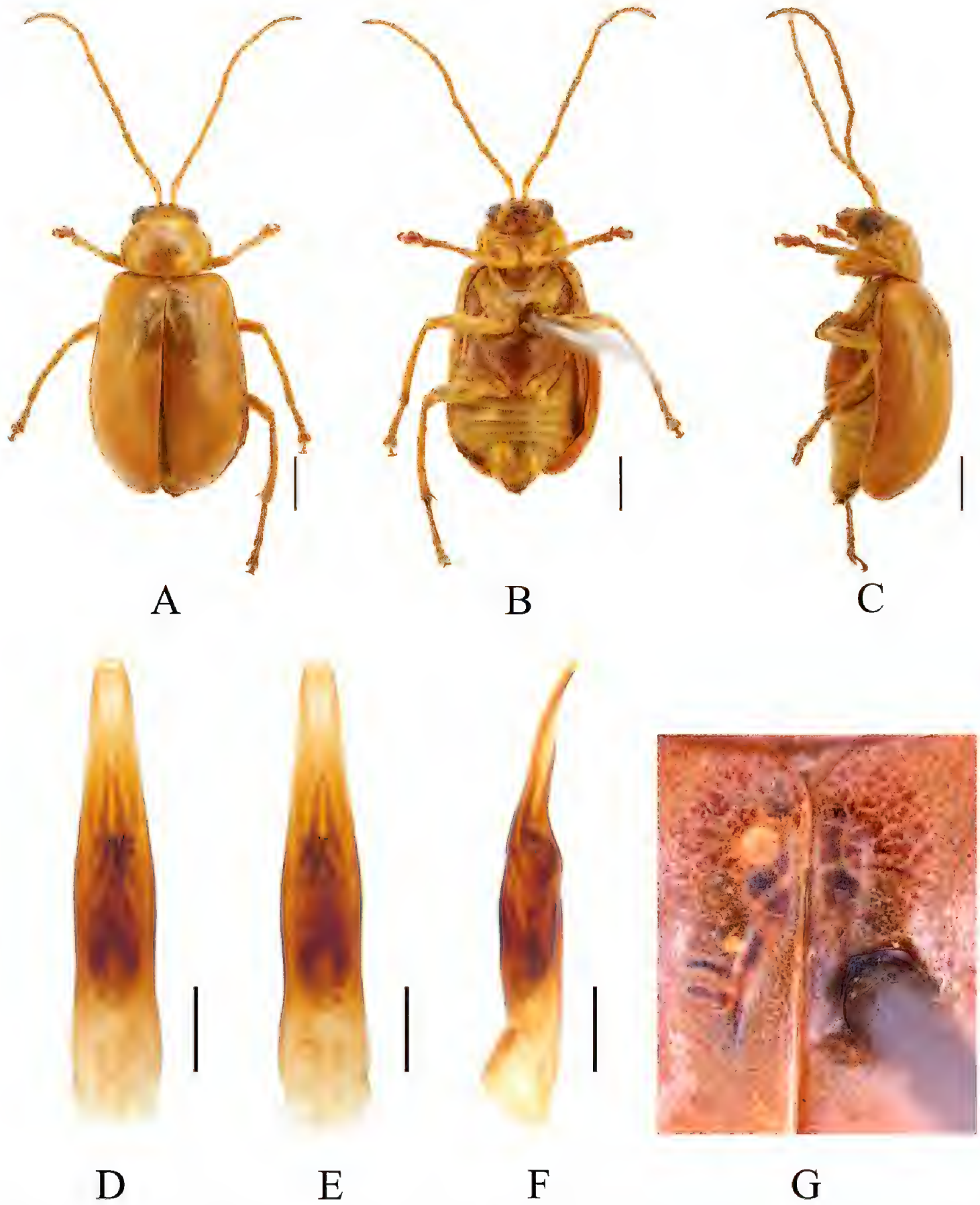

Figure 12. *Paleosepharia truncata* Laboissière, 1936 (male) **A–C** habitus **D–F** aedeagus **G** depression of the elytra of the male. **A, D** dorsal view **B, E** ventral view **C, F** lateral view. Scale bars: 1 mm (**A–C**); 0.5 mm (**D–F**).

1050–1080 m a. s. l., 8 Jun. 1958, Shuyong Wang leg., IZCAS; • 1 ♂, China, Yunan Province, Xishuangbanna, Mengzhe, 1700 m a. s. l., 10 Jun. 1958, Shuyong Wang leg., IZCAS; • 1 ♀, China, Yunan Province, Xishuangbanna, Mengzhe, 1200 m a. s. l., 15 Jun. 1958, Shuyong Wang leg., IZCAS.

Description. Male: Length: 6.8 mm, width: 3.8 mm.

General color yellow or yellowish-brown, metathorax reddish-brown, basal part of inner margin of epipleuron and base of first metatarsomere black.

Vertex with sparse punctures. Frontal tubercles transverse, extending downward between antenna bases. Antennae slender, equal to length of body. First antennomere shiny bare, rod-shaped, second to eleventh antennomeres with short hairs, second antennomere shortest, third antennomere 1.9× as long as second, fourth antennomere about 1.4× as long as third, fifth to seventh antennomeres slightly longer than fourth, eighth to eleventh antennomeres equal in length to fourth. Pronotum about 1.55× as wide as long, lateral margins slightly

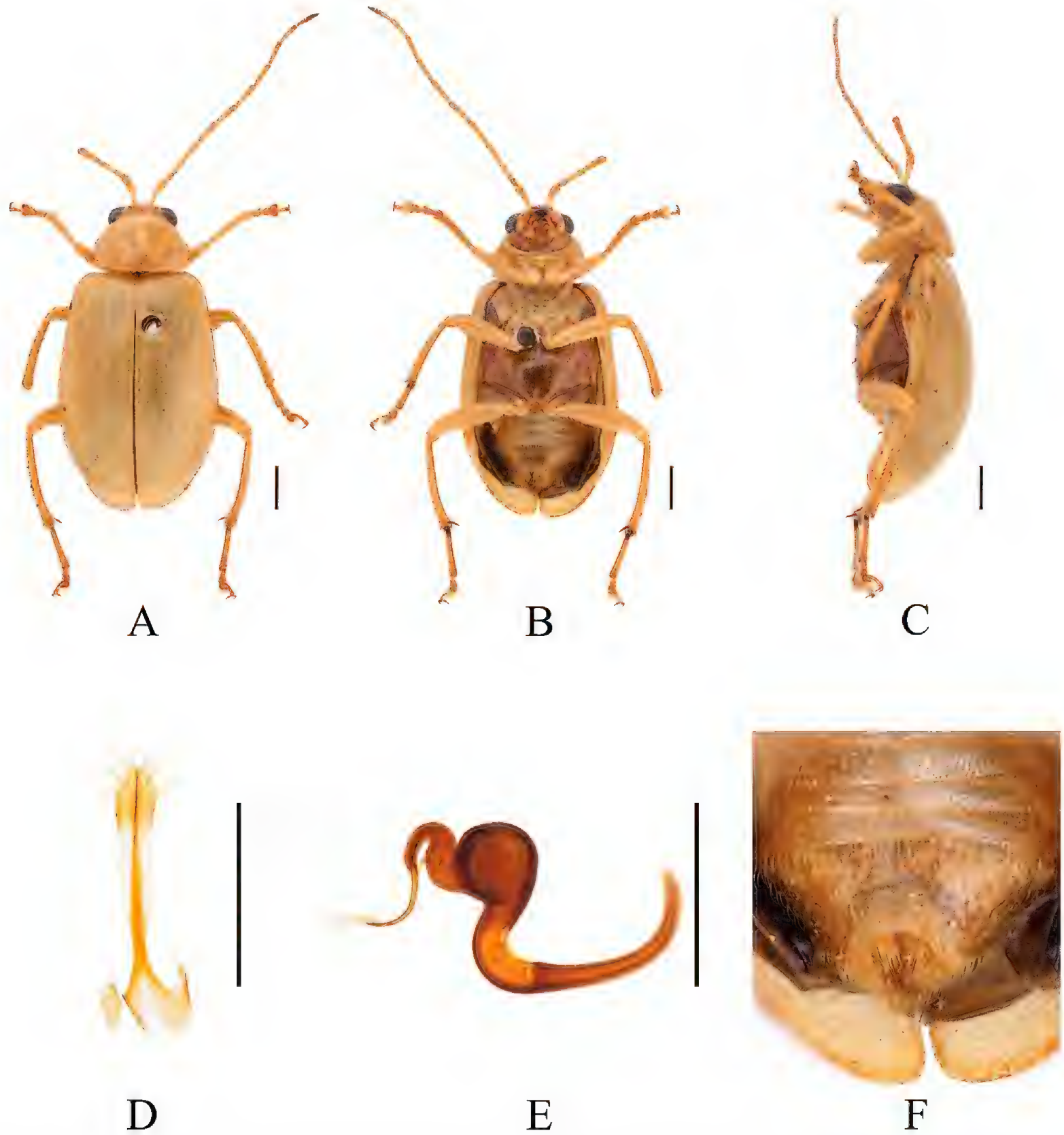

Figure 13. *Paleosepharia truncata* Laboissière, 1936 (female) **A-C** habitus **D** vaginal palps **E** spermatheca **F** apex of abdomen of the female. **A** dorsal view **B** ventral view **C** lateral view. Scale bars: 1 mm (**A–C**); 0.5 mm (**D, E**).

curved, basal border slightly convex, apical border slightly concave, disc strongly convex, with dense punctures. Scutellum triangular, smooth, impunctate. Elytra wider than pronotum, humeri convex, disc with dense, minute punctures; with elliptical postscutellar depression that extends obliquely backwards. Elytral epipleuron broad at base, continues towards apex. Each tibia with distinct spur at apex, segment 1 of hind tarsi longer than remaining segments combined. Aedeagus gradually narrowed towards apex, slightly curved at apex in lateral view. lateral and median spiculae clearly visible, ventral spiculae weakly. Median spiculae with two pairs of slender sclerites.

Female: Length: 7.4–8.2 mm, width: 4.2–4.4 mm (mean length 7.7 mm, mean width 4.3 mm, ***N*** = 4).

Elytra lacking impression. Apex of abdomen with rounded concave. Spermatheca with big and rounded nodulus, middle part short, cornu long and strongly curved. Vaginal palps gradually widened towards apex, each palp with 5 setae placed at apex, additional 2 setae subapically.

Distribution. China: Yunnan; Vietnam, Thailand, Laos.

Key to Chinese species of *Paleosepharia*

1 Elytra unicolored **2**
– Elytra bicolor or tricolor **6**
2 Elytra black ..... ***P. subnigra* Gressitt & Kimoto, 1963**
– Elytra yellow or yellow-brown or red or reddish-brown **3**
3 Head black **4**
– Head yellow or yellow-brown **5**
4 Pronotum black, Elytra with comma-shaped deep concavity and cylindrical protrusions in male ..... ***P. bicavipennis* (Chen, 1942)**
– Pronotum yellow, Elytra with a large, deep concavity near suture at basal 1/3 in male ..... ***P. quadricavata* (Chen, 1976)**
5 Metasternum black ..... ***P. kolthoffi* Laboissière, 1938**
– Metasternum yellow ..... ***P. pallens* Chen in Wang & Yang, 1998**
6 Elytra bicolor **7**
– Elytra tricolor **31**
7 Elytra with yellow and black **8**
– Elytra with yellow and red or yellow-brown and reddish-brown **27**
8 Elytra without stripes or spots **9**
– Elytra with stripes or spots **18**
9 Basal part of inner margin of epipleuron black **10**
– Lateral margins of elytra black **16**
10 Basal margin of pronotum with a tongue-shaped process in male, slightly process in female ..... ***P. lingulata* Chen & Jiang, 1984**
– Basal margin of pronotum without any process **11**
11 Metathorax reddish-brown **12**
– Mesothorax black **13**
12 Abdomen yellow, body length 6.8–8.2 mm ... ***P. truncata* Laboissière, 1936**
– Abdomen red, body length 4.5 mm .. ***P. truncatipennis* Chen & Jiang, 1984**
13 Scutellum black, elytra with spindle-shaped depressions in male ..... ***P. fusiformis* Chen & Jiang, 1984**
– Scutellum yellow **14**
14 Elytra with oval depressions in male ..... ***P. orbiculata* Chen & Jiang, 1984**
– Elytra with hook-shaped depressions in male **15**
15 Aedeagus robust, 3.1 times longer than wide, and apical protrusions nipple-shaped ..... ***P. emeiensis* sp.nov.**
– Aedeagus slender, 4 times longer than wide, apex without large protrusions ..... ***P. fulvicornis* Chen, 1942**
16 Vertex black, the depression extending from the scutellum to the middle of the elytra in male ..... ***P. verticalis* Chen & Jiang, 1984**
– Vertex yellow or yellow-brown **17**
17 Apical 1/2 of suture black ..... ***P. basituberculata* Chen & Jiang, 1984**
– Basal 1/2 of suture black ..... ***P. caudata* Chen & Jiang, 1984**
18 Elytra with black stripes **19**
– Elytra with yellow stripes or spots **26**
19 Elytra with one black stripe **20**
– Elytra with two black stripes **24**

20 Elytral transverse stripe before middle disc .....***P. amiana* (Chûjô, 1962)**
– Elytral transverse stripe after middle disc **21**
21 Elytral stripe at apex.....**22**
– Elytral stripe subapical.....***P. liquidambara* Gressitt & Kimoto, 1963**
22 Lateral margins of elytra black..... ***P. posticata* Chen, 1942**
– Lateral margins of elytra yellow 23
23 Antennal segment 5 longer than 4, postscutellar depressions straight in male.....***P. quercicola* Chen & Jiang, 1984**
– Antennal segment 5 as long as 4, postscutellar depressions "J"-shaped .. .. ***P. j-signata* Chen & Jiang, 1984**
24 Elytral anterior transverse black bands connected.....**25**
– Elytra without anterior transverse black band near the suture..... .....***P. yasumatsui* (Kimoto, 1969)**
25 Elytra with slender transverse black bands and weakly margined..... ..... ***P. excavata* (Chûjô, 1938)**
– Elytra with broad transverse black bands and distinctly margined..... .....***P. formosana* (Chûjô, 1935)**
26 Elytra black; with one pair of curved yellow stripes .... ***P. nantouensis* (Kimoto, 1996)**
– Elytra black; each elytron with a yellow spot ....***P. fasciata* Gressitt & Kimoto, 1963**
27 Elytra red, each elytron with a yellow spot..... .....***P. gongshana* Chen & Jiang, 1986**
– Elytra yellow or yellow-brown, and only a few red **28**
28 Humeral angle red **29**
– Humeral angle yellow.....**30**
29 Basal and apical l/10 of elytra red, outside tibia blackish-brown, elytra without depression..... ***P. basipennis* Gressitt & Kimoto, 1963**
– Basal 1/3 of elytral epipleuron red; tibia brown, elytra with slender depression in mela..... ***P. humeralis* Chen & Jiang, 1984**
30 Elytra with a red stripe after middle disc .....***P. jiangae* Beenen, 2008**
– Elytra without stripe, and basal part of inner margin of epipleuron red..... .....***P. tibialis* Chen & Jiang, 1984**
31 Elytra red at basal and apical l/10, without spot ....***P. castanoceps* Chen & Jiang, 1984**
– Elytra red at base, each elytron with two white spots .....***P. subrubra* sp. nov.**

Discussion

Currently, there are 32 known species of *Paleosepharia* in China and 87 species in the world. However, in the process of studying this genus, it is found that there are several characteristics that are inconsistent in *Paleosepharia*, such as the presence or absence of a spine at the end of the tibia of the fore leg, the presence or absence of a depression on the male elytra, the width of the epipleuron, the shape of the VIII sternite, etc. If reasonable, future research could explore subdividing *Paleosepharia* into several groups based on a combination of several key features. Moreover, we aim to use more extensive data to verify the monophyly of these groups.

Acknowledgements

We extend our heartfelt gratitude to Mr Ron Beenen (Nieuwegein, the Netherlands) and Dr Jan Bezděk (Mendel University, Brno, Czech Republic) for their professional comments on the manuscript. We would like to thank Mr Jacob Muinde (IZCAS) for checking the language of the manuscript. We thank Professor Thomas Wagner (University of Koblenz) for making revisions to the manuscript. We thank Dr Kuiyan Zhang from the Institute of Zoology, Chinese Academy of Sciences and Mr Haidong Yang from the Institute of Zoology, Guangdong Academy of Science for access to collections and loans of specimens.

Additional information

Conflict of interest

The authors have declared that no competing interests exist.

Ethical statement

No ethical statement was reported.

Funding

This work was supported by the National Natural Science Foundation of China (No. 32270460), the Third Xinjiang Scientific Expedition Program (No. 2021xjkk0605), the survey of wildlife resources in key areas of Tibet (ZL202203601) and Science & Technology Fundamental Resources Investigation Program (Grant No. 2022FY202100).

Author contributions

Writing - original draft: CFF. Writing - review and editing: SG, XY.

Author ORCIDs

Chuan Feng https://orcid.org/0009-0001-9299-3526
Xingke Yang https://orcid.org/0000-0002-0870-4657
Siqin Ge https://orcid.org/0000-0001-5924-3400

Data availability

All of the data that support the findings of this study are available in the main text.

References

Beenen R (2008) Taxonomical and nomenclatural changes in Palaearctic Galerucinae and description of a new species (Chrysomelidae). Entomologische Blaetter fuer Biologie und Systematik der Kaefer 103: 63–80.

Beenen R (2010) Galerucinae. In: Löbl I, Smetana A (Eds) Catalogue of Palaearctic Coleoptera, Vol. 6. Chrysomeloidea. Apollo Books, Stenstrup, 443–491.

Beenen R (2024) Galerucitae. In: Bezděk J, Sekerka L (Eds) Catalogue of Palaearctic Coleoptera, Vol. 6/2/1. Chrysomeloidea II (Orsodacnidae, Megalopodidae, Chrysomelidae). Updated and Revised Second Edition. Brill, Leiden/Boston, 378–468. https://doi.org/10.1163/9789004443303

Bezděk J, Sekerka L (2024) Catalogue of Palaearctic Coleoptera, Vol. 6/2/1. Chrysomeloidea II (Orsodacnidae, Megalopodidae, Chrysomelidae). Updated

and Revised Second Edition. Brill, Leiden/Boston, 1–750. https://doi.org/10.1163/9789004443303

Chapuis F (1875) Famile des Phytophages. In: Lacordaire, M. Th., Chapuis, M. F. Histoire Naturelle des Insectes, Genera des coléoptères ou exposé méthodique et critique de tous les genres proposés jusqu'ici dans cet orderd'insectes. Tome onzième. Paris: Lib. Encyclop Roret, 420 pp.

Chen SH (1942) Galerucinae nouveaux de la faune chinoise. Notes d'Entomologie Chinoise 9: 9–67.

Chen SH, Jiang SQ (1984) New species of Chinese Galerucinae (Coleoptera: Chrysomelidae). Entomotaxonomia 6(2–3): 83–92.

Chen SH, Jiang SQ (1986) Two new species of Galerucinae from Sichuan and Yunnan Provinces (Coleoptera: Chrysomelidae). Acta Zootaxonomica Sinica 11: 198–200.

Chen SH, Yu PY, Wang SY, Jiang SQ (1976) New leaf beetles from west China. Acta Entomologica Sinica 19: 205–224.

Chûjô M (1935) H. Sauter's. Formosa-Ausbeute: Subfamily Galerucinae (Coleoptera: Chrysomelidae). Arbeiten über Morphologische und Taxonomische Entomologie 2: 160–174.

Chûjô M (1938) H. Sauter's Formosa-Collection: subfamily Galerucinae (Coleoptera: Chrysomelidae). Arbeiten über Morphologische und Taxonomische Entomologie 5: 135–152.

Chûjô M (1962) A taxonomic study on the Chrysomelidae (Insecta: Coleoptera) from Formosa Part XI. Subfamily Galerucinae. The Philippine Journal of Science 91: 1–239.

Gressitt JL, Kimoto S (1963) The Chrysomelidae (Coleopt.) of China and Korea. Part II. Pacific Insects Monograph 1B: 301–1026.

Hazmi IR, Wagner T (2010a) *Rubrarcastes* gen. nov., a new group of Oriental galerucine leaf beetles (Coleoptera: Chrysomelidae, Galerucinae). Entomologische Zeitschrift 120: 85–88.

Hazmi IR, Wagner T (2010b) Revalidation and revision of Ochralea Clark, 1865 (Coleoptera: Chrysomelidae: Galerucinae) from the Oriental region. Zootaxa 2530: 47–59. https://doi.org/10.11646/zootaxa.2530.1.5

Hazmi IR, Wagner T (2013) Revision of *Neolepta* Jacoby, 1884 and related Galerucines from the Oriental Region, including descriptions of two new genera (Coleoptera: Chrysomeloidea: Galerucinae). Raffles Bulletin of Zoology 61: 73–95.

Kimoto S (1969) Motes on the Chrysomelidae from Taiwan II. Esakia 7: 1–68. https://doi.org/10.5109/2358

Kimoto S (1996) Notes on the Chrysomelidae from Taiwan, China. XIII. Entomological Review of Japan 51: 27–51.

Laboissière V (1936) Observations sur les Galerucini asiatiques principalement du Tonkin et du Yunnan et descriptions de nouveaux genres et espèces (5e partie). Annales de la Société Entomologique de France 105: 239–262. https://doi.org/10.1080/21686351.1936.12278963

Laboissière V (1938) Galerucinae (Col.) de la Chine du Musée de Stockholm. Arkiv för Zoologi 30A: 1–9.

Lee CF (2020) Revision of Taiwanese species of *Atrachya* Chevrolat, 1836 (Coleoptera, Chrysomelidae, Galerucinae): descriptions of three new genera, two new species, and designations of three new synonyms. ZooKeys 940: 117–159. https://doi.org/10.3897/zookeys.940.51800

Medvedev LN (2009) Chrysomelidae (Coleoptera) of high mountain regions of North-West Vietnam. Russian Entomological Journal 18: 201–208.

Medvedev LN (2012) New species of Chrysomelidae (Coleoptera) from Indochina. Euroasian Entomological Journal 11: 63–69.

Medvedev LN (2013) New taxa of Oriental leaf beetles (Coleoptera: Chrysomelidae). Russian Entomological Journal 22: 293–296. https://doi.org/10.1134/S0013873813030032

Medvedev LN (2014) Revision of the genus Paleosepharia Laboissière, 1936 (Coleoptera: Chrysomelidae) from Indochina. Russian Entomological Journal 23: 45–51. https://doi.org/10.15298/rusentj.23.1.06

Mohamedsaid MS (1996) Paleosepharia of Peninsular Malaysia (Coleoptera: Chrysomelidae: Galerucinae). Serangga 1: 7–21. https://doi.org/10.5962/p.345487

Mohamedsaid MS (1999) The Galerucinae from Taman Kinabalu Sabah, Malaysia (Coleoptera: Chrysomelidae). Serangga 4: 87–145.

Mohamedsaid MS (2000) New species of Galerucinae from Borneo (Coleoptera: Chrysomelidae). Serangga 5: 281–308.

Mohamedsaid MS (2001) New species of Galerucinae (Coleoptera: Chrysomelidae) from Malaysia. Serangga 6: 233–294.

Nie RE, Bezdek J, Yang XK (2017) How many genera and species of Galerucinae *s. str.* do we know? Updated statistics (Coleoptera, Chrysomelidae). ZooKeys 720: 91–102. https://doi.org/10.3897/zookeys.720.13517

Rizki A, Hazmi IR, Wagner T, Idris AB (2016) Redescription of *Paleosepharia trunctata* Laboissière, 1936, type species of the genus *Paleosepharia* Laboissière, 1936 (Coleoptera: Chrysomelidae: Galerucinae). Coleopterists Bulletin 70: 395–398. https://doi.org/10.1649/0010-065X-70.2.395

Wagner T (1999) An introduction to the revision of the afrotropical *Monolepta* and related taxa (Coleoptera, Chrysomelidae, Galerucinae). Courier Forschungsinstitut Senckenberg 215: 215–220.

Wagner T (2003) Present status of a taxonomic revision of Afrotropical *Monolepta* and related groups (Galerucinae). In: Furth DG (Ed.) Special Topics in Leaf Beetle Biology. Proceedings V International Symposium on the Chrysomelidae, Foz do Iguacu 2000. Pensoft, Sofia, 133–146.

Wagner T (2004) Phylogeny of Afrotropical *Monolepta* and related taxa (Galerucinae). SPB Academic Publishing bv, 75–84. https://doi.org/10.1163/9789004475335_009

Wagner T (2007) Revision of *Afrocrania* (Coleoptera: Chrysomelidae: Galerucinae) part II: species in which the males lack head cavities or extended elytral extrusions. European Journal of Entomology 104: 801–814. doi:https://doi.org/10.14411/eje.2007.101

Wagner T (2011) Description of *Monoleptoides* gen. nov. from the Afrotropical Region, including the revision of nine species (Coleoptera: Chrysomelidae: Galerucinae). Bonn Zoological Bulletin 60: 169–199.

Wagner T (2017) Quo vadis biodiversity? Species richness following twenty years of taxonomic revisions on Afrotropical Galerucinae *s. str.* (Coleoptera, Chrysomelidae). ZooKeys 720: 131–137. https://doi.org/10.3897/zookeys.720.14011

Wang JS Yang XK (1998) Fauna of Chrysomeloidea of Wuyishan Natural Reserve in China. China Forestry Publishing House, Bejing, 213 pp.

Wilcox JA (1973) Coleopterum Catalogus Supplementa (Chrysomelidae: Galerucinae, Luperini: Luperina), Pars 78, Fasc. 3. 2nd edn. Dr. W. Junk, Gravenhage, 433–664.

Wilcox JA (1975) Coleopterum Catalogus Supplementa (Chrysomelidae: Galerucinae. Addenda et index). Pars 78, Fasc. 4. 2nd edn. Dr. W. Junk, Gravenhage, 667–770.

Yang XK, Ge SQ, Nie RE, Ruan YY, Li WZ (2015) Chinese leaf beetles. Science Press, Beijing, 507 pp.